at the calling office and at the originating office, but it was found to be impracticable to provide a suitable routine testing procedure for the terminating office because of the multiplicity of paths that any particular call might follow. It was decided, therefore, to arrange the terminating marker to apply a continuity test for each call to make sure, before it is disconnected, that a circuit is completed to a subscriber line.

Briefly, the method consists in sending grounded 20-cycle current through the central-office contacts, out on one side of the subscriber line, through the station ringer, or signal, and to ground either at the subscriber station or at the central office. The difficulty associated with widely varying circuit capacitances and resistances was overcome by taking advantage of the difference in phase between the current flowing through the office capacitance and that flowing over the subscriber line, which latter is chiefly resistive under extreme conditions. In the extreme case, when the ground capacitance is zero and the circuit is closed, the current that flows is in phase with the applied voltage, whereas when the capacitance from the 20-cycle supply to ground is a maximum and the circuit is open, the current flowing is 90° out of phase with the applied voltage. An open circuit with high leakage may thus draw more current than a closed circuit with low leakage, but the angular displacements of the currents with respect to the applied voltage are very different. The new test is based upon this fact, and current flowing in the test circuit is determined from the voltage drop across a condenser in series with the subscriber line. The article describes the test circuits and apparatus in detail and indicates the criteria governing the test.

Philosophy in the *Philosophical Magazine*

ALTHOUGH physics is regarded as one of the exact sciences, exactitude was not always found in the titles of its journals. For many years *Science Abstracts* was regarded as an adequate title for the journal now known as *Physics Abstracts*, and the *London, Edinburgh and Dublin Philosophical Magazine and Journal of Science* has published many more papers in physics than in philosophy. In the May number of the latter, however, four of the seven papers are mainly philosophical. Prof. E. T. Whittaker gives a stimulating discussion of "Some Disputed Questions in the Philosophy of the Physical Sciences", using well-chosen analogies. Attention is naturally given to the attempts of mathematicians to discover 'facts' without the use of experiment or observation. As mathematical symbols are not used, the paper is suitable also for the general reader. The other three papers deal with the thorny subject of dimensions. In a brief note, Dr. Norman Campbell points out that writers on the subject are apt to ignore much of the vast literature because "anyone who attempted to summarize the literature would become involved in so many controversies that he could get no further". Since assignment of dimensions is a means to an end, and not an end in itself, writers are urged to state explicitly what end they have in view and how that end is served by the considerations presented in their writings. In a paper of twenty-four pages, Prof. H. Dingle attempts to relate the subject to more fundamental and universally acceptable ideas. Twelve definitions and postulates are given as a set of principles upon which discussion of dimensions may be based. The third paper, by Dr. G. B. Brown, is a reply to some criticisms of Prof. Wilson upon a recent paper on dimensions published originally in the *Proceedings of the Physical Society*, **53**, 418 (1941).

Potentialities of the Forests of Latin America

PROF. S. J. RECORD of the School of Forestry, Yale University, raises the question of the utilization of the "enormous areas" of potentially commercial forest in Latin America in a brief article in *Tropical Woods* (No. 70. Yale University; June, 1942) that deserves wide consideration. He points out the reasons for the lack of demand for tropical lumber. Tropical timbers are different from those growing in the north temperate zone; they may not be inferior but their technical properties are unknown to the consumer. Private commercial concerns naturally do not face the trouble and expense involved in trying out the utility of the new wood for their purpose and they have no guarantee of continuity of supply of the new type. The plain lack is that of subsidized laboratory facilities to make pilot tests on the utility of available timber, to trace defects in supply to their source, to encourage good forestry management and exploitation and to educate the trade in the utilization of the new wood in manufacturing processes. Prof. Record concludes: "Science and Engineering together can find a way to use the tropical forest as a whole and make it a perpetual source, not only of plywood and lumber, but also of unlimited quantities of cellulose, a basic material with a myriad actual and potential applications in industry."

Discovery of the North American Flora

MANY kinds of trees and shrubs now used in forestry and gardening owe their introduction to the pioneer journeys of David Douglas (1799–1834). These early botanical explorations form the subject of a recent paper by F. R. S. Balfour (*J. Roy. Hort. Soc.*, **67**, Parts 4 and 5; April and May, 1942). Douglas's journey to the North Pacific Coast in 1824 was backed by the Royal Horticultural Society, and resulted in the introduction of such garden favourites as *Ribes sanguineum* and *Berberis aquifolium*. New conifers were later discovered, namely, *Pinus nobilis*, *P. amabilis*, *P. lambestiana*, *Larix occidentalis*, *Thuja plicata* and many others. Neither shipwreck nor illness deterred this intrepid botanist, and while most of his journeys were made in North America, he met a rather strange death during a journey in Hawaii.

Cancer Control

AN annotation in the *Journal of the American Medical Association* of April 18 states that since a cancer control programme was inaugurated fifteen years ago in Massachusetts, about 14,000 patients with cancer, 40 per cent of whom are still alive, have attended the special clinics for the disease. 80·8 per cent of the patients were referred by medical practitioners to the clinics as compared with only 20·1 per cent in the first year of the programme. Between 1927 and 1935, 421 medical men used the tumour diagnostic service as compared with 798 in 1940. As regards the education of the public, the delay between the time of the first recognized symptom of the disease and the time that the patient obtained